

WHAT IS CLAIMED IS:

1. A fastener driving device comprising:
 - a portable frame constructed and arranged to be manually handled,
 - said frame defining a fastener driving track,
 - a magazine assembly constructed and arranged to feed successive fasteners from a supply of fasteners along a feed track into said drive track,
 - a fastener driving element mounted in said drive track,
 - a power system constructed and arranged to move said fastener driving element through successive operating cycles each of which includes a drive stroke operable to drive a leading fastener fed along said feed track into said drive track outwardly into a workpiece and a return stroke,
 - an actuating assembly constructed and arranged to actuate said power system to move through an operating cycle, including an input actuator movable from an inoperative position into an operative position to actuate said power system,
 - a contact trip assembly mounted for movement from an inoperative position into an operative position in response to the engagement of the tool with a workpiece,
 - a trigger assembly operatively disposed between said contact trip assembly and said actuating assembly including:
 - a trigger member pivoted to said frame for movement between inoperative and operative positions,
 - an actuating member having a connection with said trigger member and a free end cooperable with an output actuator of said contact trip assembly constructed and arranged to enable a portion of said actuating member to move the input actuator of said actuating assembly into its operative position in response to movement of said contact trip assembly and said trigger member into the operative positions thereof,
 - the connection of said actuating member with respect to said trigger member being constructed and arranged to accommodate movement of said actuating member with respect to said trigger member between
 - (1) a first position wherein the free end of said actuating member can be moved into a position in which the free end is retained in the path of movement of the output actuator following rebound or manual movement of the contact trip assembly out of its operative position while said trigger member is retained in its operative position following an actuating movement of the input actuator, and
 - (2) a second position wherein the free end of said actuating member can be

moved into a bypass position in which the free end is out of the path of movement of the output actuator following the rebound or manual movement of the contact trip assembly out of its operative position while the trigger member is retained in its operative position following an actuating movement of the input actuator, and

an automatic mode selecting mechanism including a mode selecting member having a connection with said actuating member constructed and arranged to make said mode selecting member

(1) to move with said actuating member with respect to said trigger member between the first and second positions of said actuating member, and

(2) to have a relative movement with respect to said actuating member so that said mode selecting mechanism

(a) retains said actuating member in the first position thereof in response to an initial movement of said trigger member to the operative position thereof, and

(b) retains said actuating member in the second position thereof in response to an initial movement of said contact trip assembly into the operative position thereof and a subsequent movement of said trigger member into the operative position thereof.

2. A fastener driving device according to claim 1, wherein the connections of said actuating member and said mode selecting member together and to said trigger member include a pivoting structure defining a pivotal axis for said actuating member which is movable with respect to said trigger member between spaced positions toward and away from said output actuator corresponding to said first and second positions of said actuating member.

3. A fastener driving device according to claim 2, wherein a spring system resiliently biases said pivoting structure and said pivotal axis toward and into the position thereof toward said output actuator.

4. A fastener driving device according to claim 3, wherein during the initial movement of the trigger member into the operative position thereof, said mode selecting member is moved into a position retaining said pivoting structure from moving against the

bias of said spring system out of the position thereof toward said output actuator so long as said trigger member is retained in the operative position thereof.

5. A fastener driving device according to claim 2, wherein during the initial movement of said contact trip assembly into the operative position thereof and the subsequent movement of said trigger member into the operative position thereof said actuating member is moved into the second position thereof, said pivoting structure is moved into the position thereof away from said output actuator and said mode selecting member is moved into a position retaining said pivoting structure in the position thereof away from said output actuator so long as said trigger member is retained in the operative position thereof.

6. A fastener driving device according to claim 2, wherein said trigger member includes generally parallel walls interconnected by a transverse wall defining a U-shaped cross-sectional configuration, said parallel walls including slots receiving pivot pin ends of said pivoting structure.

7. A fastener driving device according to claim 2, wherein said pivoting structure is (1) spring biased to move said actuating member toward and into the first position thereof so long as said contact trip assembly is in the inoperative position thereof, and (2) yieldingly movable against said spring bias to move the actuating member out of said first position toward the second position thereof in response to the initial movement of said contact trip assembly into the operative position thereof.

8. A fastener driving device according to claim 2, wherein said mode selecting member comprises a bell crank lever having a first arm cooperatable with said frame so that after said trigger member has been initially moved into the operative position thereof said bell crank lever is retained against movement in a first position and is operable to retain said actuating member in the first position thereof so long as said trigger member is retained in the operative position thereof and (2) after said trigger member has been subsequently moved into the operative position thereof following an initial movement of said contact trip assembly into the operative position thereof said bell crank lever is retained against movement in a second position and is operable to retain said actuating member in the second position thereof so long as the trigger member is retained in the operative position thereof.

9. A fastener driving device according to claim 8, wherein said bell crank lever is pivoted by said pivoting structure which defines a common pivotal axis for said bell crank lever and said actuating member, which common pivotal axis is movable with respect to said trigger member enabling said bell crank lever and said actuating member to be moved together between the first and second positions thereof.

10. A fastener driving device according to claim 9, further comprising a pin operatively engaged with the bell crank lever to prevent pivotal movement of the bell crank lever but allow linear movement of the bell crank lever with respect to the trigger member between the first and second positions.

11. A fastener driving device according to claim 9, wherein said automatic mode selecting mechanism includes (1) a first surface on said frame slidably cooperating with said first arm and cooperating with the mounting of said bell crank lever with respect to said trigger member to prevent movement of said bell crank lever and said actuating member when said actuating member is in the first position thereof and said trigger member is initially moved into the operative position thereof and (2) a second surface on said frame in spaced relation to said first surface slidably cooperating with said first arm and cooperating with the mounting of said bell crank lever with respect to said trigger member to prevent movement of said bell crank lever and said actuating member when said actuating member is in the second position thereof by virtue of the initial movement of said contact trip assembly into the operative position thereof.

12. A fastener driving device according to claim 11, wherein said bell crank lever has a first spring acting thereon yieldably biasing the bell crank lever in a direction to move the actuating member into the first position thereof, said actuating member having a second spring yieldably biasing said actuating member to pivot in a counterclockwise direction.

13. A fastener driving device according to claim 8, wherein the output actuator of the contact trip assembly has a ramped configuration structured to force the bell crank lever from the first position to the second position thereof during the initial movement of the contact trip assembly into the operative position thereof and the subsequent movement of the trigger member into the operative position thereof.

14. A fastener driving device according to claim 2, wherein said mode selecting member comprises an elongated member having a free end, an opposite end portion slidably mounted within an end receiving slot within said trigger member and an intermediate portion connected with said pivoting structure so as to be moved with said actuating member between the first and second positions thereof.

15. A fastener driving device according to claim 14, wherein the end receiving slot within said trigger member also receives therein a spring biasing elongated member and said actuating member into the first positions thereof.

16. A fastener driving device according to claim 15, wherein said automatic mode selecting mechanism includes a mode controlling member having a spring biased one way connection with the output actuator of said contact trip assembly enabling (1) said mode controlling member to move from an inoperative position into an operative position in response to an initial movement of said contact trip assembly from the inoperative position thereof into the operative position thereof and (2) said mode controlling member and said output actuator to have a relative movement with respect to one another, said mode controlling member when in the operative position thereof being disposed in the path of movement of the free end of said elongated member with said trigger member so that the subsequent movement of the trigger member into the operative position thereof after the initial movement of said contact trip assembly into the operative position thereof effects a relative movement between said elongated member and said trigger member against the spring bias of said elongated member operable to enable said actuating member to assume the second position thereof, said mode controlling member when in the inoperative position thereof being out of the path of movement of the free end of said elongated member with said trigger member that during an initial movement of said trigger member into the operative position said actuating member is retained in the spring biased first position thereof.

17. A fastener driving device according to claim 16, wherein said mode controlling member includes a projecting end portion constructed and arranged to engage the free end of said elongated member after said actuating member has assumed the second position thereof and prevent (1) movement of said mode controlling member from the

operative position thereof and (2) movement of the actuating member into the first position thereof so long as said trigger member is retained in the operative position thereof.

18. A trigger assembly for a fastener driving device having
a portable frame constructed and arranged to be manually handled,
said frame defining a fastener driving track,
a magazine assembly constructed and arranged to feed successive fasteners from a supply of fasteners along a feed track into said drive track,
a fastener driving element mounted in said drive track,
a power system constructed and arranged to move said fastener driving element through successive operating cycles each of which includes a drive stroke operable to drive a leading fastener fed along said feed track into said drive track outwardly into a workpiece and a return stroke,

an actuating assembly constructed and arranged to actuate said power system to move through an operating cycle, including an input actuator movable from an inoperative position into an operative position to actuate said power system,

a contact trip assembly mounted for movement from an inoperative position into an operative position in response to the engagement of the tool with a workpiece,

said trigger assembly comprising:

a trigger member pivoted to said frame between said contact trip assembly and said actuating assembly for movement between inoperative and operation positions,

an actuating member having a connection with said trigger member and a free end cooperable with an output actuator of said contact trip assembly constructed and arranged to enable a portion of said actuating member to move the input actuator of said actuating assembly into its operative position in response to movement of said contact trip assembly and said trigger member into the operative positions thereof,

the connection of said actuating member with respect to said trigger member being constructed and arranged to accommodate movement of said actuating member with respect to said trigger member between

(1) a first position wherein the free end of said actuating member can be moved into a position in which the free end is retained in the path of movement of the output actuator following rebound or manual movement of the contact trip assembly out of its operative position while said trigger member is retained in its operative position following an

actuating movement of the input actuator, and

(2) a second position wherein the free end of said actuating member can be moved into a bypass position in which the free end is out of the path of movement of the output actuator following the rebound or manual movement of the contact trip assembly out of its operative position while the trigger member is retained in its operative position following an actuating movement of the input actuator, and

an automatic mode selecting mechanism including a mode selecting member having a connection with said actuating member constructed and arranged to make said mode selecting member

(1) to move with said actuating member with respect to said trigger member between the first and second positions of said actuating member, and

(2) to have a relative movement with respect to said actuating member so that said mode selecting mechanism

(a) retains said actuating member in the first position thereof in response to an initial movement of said trigger member to the operative position thereof, and

(b) retains said actuating member in the second position thereof in response to an initial movement of said contact trip assembly into the operative position thereof and a subsequent movement of said trigger member into the operative position thereof.

19. A trigger assembly according to claim 18, wherein the connections of said actuating member and said mode selecting member together and to said trigger member include a pivoting structure defining a pivotal axis for said actuating member which is movable with respect to said trigger member between spaced positions toward and away from said output actuator corresponding to said first and second positions of said actuating member.

20. A trigger assembly according to claim 19, wherein a spring system resiliently biases said pivoting structure and said pivotal axis toward and into the position thereof toward said output actuator.

21. A trigger assembly according to 20, wherein during the initial movement of the trigger member into the operative position thereof, said mode selecting member is moved

into a position retaining said pivoting structure from moving against the bias of said spring system out of the position thereof toward said output actuator so long as said trigger member is retained in the operative position thereof.

22. A trigger assembly according to claim 19, wherein during the initial movement of said contact trip assembly into the operative position thereof and the subsequent movement of said trigger member into the operative position thereof said actuating member is moved into the second position thereof, said pivoting structure is moved into the position thereof away from said output actuator and said mode selecting member is moved into a position retaining said pivoting structure in the position thereof away from said output actuator so long as said trigger member is retained in the operative position thereof.

23. A trigger assembly according to claim 19, wherein said trigger member includes generally parallel walls interconnected by a transverse wall defining a U-shaped cross-sectional configuration, said parallel walls including slots receiving pivot pin ends of said pivoting structure.

24. A trigger assembly according to claim 19, wherein said pivoting structure is (1) spring biased to move said actuating member toward and into the first position thereof so long as said contact trip assembly is in the inoperative position thereof, and (2) yieldingly movable against said spring bias to move the actuating member out of said first position toward the second position thereof in response to the initial movement of said contact trip assembly into the operative position thereof.

25. A trigger assembly according to claim 19, wherein said mode selecting member comprises a bell crank lever having a first arm cooperatable with said frame so that after said trigger member has been initially moved into the operative position thereof said bell crank lever is retained against movement in a first position and is operable to retain said actuating member in the first position thereof so long as said trigger member is retained in the operative position thereof and (2) after said trigger member has been subsequently moved into the operative position thereof following an initial movement of said contact trip assembly into the operative position thereof said bell crank lever is retained against

movement in a second position and is operable to retain said actuating member in the second position thereof so long as the trigger member is retained in the operative position thereof.

26. A trigger assembly according to claim 25, wherein said bell crank lever is pivoted by said pivoting structure which defines a common pivotal axis for said bell crank and said actuating member, which common pivotal axis is movable with respect to said trigger member enabling said bell crank lever and said actuating member to be moved together between the first and second positions thereof.

27. A trigger assembly according to claim 26, further comprising a pin operatively engaged with the bell crank lever to prevent pivotal movement of the bell crank lever but allow linear movement of the bell crank lever with respect to the trigger member between the first and second positions.

28. A trigger assembly according to claim 26, wherein said automatic mode selecting mechanism includes (1) a first surface on said frame slidably cooperating with said first arm and cooperating with the mounting of said bell crank lever with respect to said trigger member to prevent movement of said bell crank lever and said actuating member when said actuating member is in the first position thereof and said trigger member is initially moved into the operative position thereof and (2) a second surface on said frame in spaced relation to said first surface slidably cooperating with said first arm and cooperating with the mounting of said bell crank with respect to said trigger member to prevent movement of said bell crank lever and said actuating member when said actuating lever is in the second position thereof by virtue of the initial movement of said contact trip assembly into the operative position thereof.

29. A trigger assembly according to claim 28, wherein said bell crank lever has a first spring acting thereon yieldably biasing the bell crank lever in a direction to move the actuating member into the first position thereof, said actuating member having a second spring yieldably biasing said actuating member to pivot in a counterclockwise direction.

30. A trigger assembly according to claim 25, wherein the output actuator of the contact trip assembly has a ramped configuration structured to force the bell crank lever from

the first position to the second position thereof during the initial movement of the contact trip assembly into the operative position thereof and the subsequent movement of the trigger member into the operative position thereof.

31. A trigger assembly according to claim 19, wherein said mode selecting member comprises an elongated member having a free end, an opposite end portion slidably mounted within an end receiving slot within said trigger member and an intermediate portion connected with said pivoting structure so as to be moved with said actuating member between the first and second positions thereof.

32. A trigger assembly according to claim 31, wherein the end receiving slot within said trigger member also receives therein a spring biasing elongated member and said actuating member into the first positions thereof.

33. A trigger assembly according to claim 32, wherein said automatic mode selecting mechanism includes a mode controlling member having a spring biased one way connection with the output actuator of said contact trip assembly enabling (1) said mode controlling member to move from an inoperative position into an operative position in response to an initial movement of said control trip assembly from the inoperative position thereof into the operative position thereof and (2) said mode controlling member and said output actuator to have a relative movement with respect to one another, said mode controlling member when in the operative position thereof being disposed in the path of movement of the free end of said elongated member with said trigger member so that the subsequent movement of the trigger member into the operative position thereof after the initial movement of said contact trip assembly into the operative position thereof effects a relative movement between said elongated member and said trigger member against the spring bias of said elongated member operable to enable said actuating member to assume the second position thereof, said mode controlling member when in the inoperative position thereof being out of the path of movement of the free end of said elongated member with said trigger member that during an initial movement of said trigger member into the operative position said actuating member is retained in the spring biased first position thereof.

34. A trigger assembly according to claim 33, wherein said mode controlling member includes a projecting end portion constructed and arranged to engage the free end of said elongated member after said actuating member has assumed the second position thereof and prevent (1) movement of said mode controlling member from the operative position thereof and (2) movement of the actuating member into the first position thereof so long as said trigger member is retained in the operative position thereof.